



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| | | | | |
|---|-------------|----------------------|---------------------|------------------|
| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/587,632 | 09/14/2006 | Xiao-Yang Huang | 36398US1 | 1211 |
| 116 | 7590 | 08/05/2009 | | |
| PEARNE & GORDON LLP 1801 EAST 9TH STREET SUITE 1200 CLEVELAND, OH 44114-3108 | | | EXAMINER | PATEL, NITIN |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2629 | |
| | | | | |
| | | | MAIL DATE | DELIVERY MODE |
| | | | 08/05/2009 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | |
|------------------------------|--------------------------------------|-------------------------------------|
| Office Action Summary | Application No. 10/587,632 | Applicant(s) HUANG ET AL. |
| | Examiner Nitin Patel | Art Unit 2629 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 28 July 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 24 and 25 is/are allowed.
- 6) Claim(s) 1-16,22,23 and 26-34 is/are rejected.
- 7) Claim(s) 17-21 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanaka et al., (US 5,712,695).

As per claims 1-8, Tanaka shows a liquid crystal display having a plurality of stacked layers comprising: a plurality of layers of liquid crystal material each having opposing surfaces; a plurality of electrically conductive layers disposed so as to be located near both of said opposing surfaces of said liquid crystal layers, wherein only one of said electrically conductive layers is disposed between adjacent said liquid crystal layers, and drive electronics adapted to apply the same voltages pulses to adjacent said liquid crystal layers along the only one said electrically conductive layer (in fig.1 and in col.4-8).

As per claims 9-16, Tanaka shows a stacked liquid crystal display sequentially comprising the following stacked layers: a top electrode layer of electrodes; a first liquid crystal layer; an upper middle electrode layer of electrodes; a second liquid crystal layer; a lower middle electrode layer of electrodes; a third liquid crystal layer; a bottom

electrode layer of electrodes, and a shared electrode addressing construction in which said upper middle electrode layer is adapted to enable driving of said first liquid crystal layer and said second liquid crystal layer and said lower middle electrode layer is adapted to enable driving of said second liquid crystal layer and said third liquid crystal layer(in fig.1,9 and in col.13-15).

As per claims 26-34, Tanaka shows multi-layer stacked liquid crystal display film comprising: a plurality of liquid crystal film layers; and a plurality of electrode film layers for driving said plurality of liquid crystal' Film layers, wherein all of said film layers are printed or coated in a stack upon each other, wherein a pixel is formed from a portion of each of said plurality of liquid crystal layers, such that a color or shade of said pixel is formed by light reflecting from all of said portions of said plurality of liquid crystal layers, and wherein at least one of said plurality of electrode layers is adapted to enable driving of two adjacent said liquid crystal layers(in fig.1 and 9 and in col.4-7 and 13-16).

Allowable Subject Matter

2. Claims 17-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art fails t teach or suggest a display adapted such that a reflective state of a portion said first liquid crystal layer corresponding to a pixel of said display is changed by providing a voltage difference between an electrode of said top electrode layer and an electrode of said upper middle electrode layer, and adapted such that a reflective state of a portion said second liquid crystal layer corresponding to said pixel of

Art Unit: 2629

said display is changed by providing a voltage difference between an electrode of said upper middle electrode layer and an electrode of said lower middle electrode layer, and further adapted such that a reflective state of a portion of said third liquid crystal layer corresponding to said pixel of said display is changed by providing a voltage difference between an electrode of said lower middle electrode layer and an electrode of said bottom electrode layer; thereby updating a state of said pixel of said display as claimed in claim 17.

3. Claims 24, 25 are allowed.

The prior art fails to teach or suggest a stacked liquid crystal display comprising: a top electrode layer of electrodes; an upper middle electrode layer of electrodes; a first liquid crystal layer sandwiched between said top electrode layer and said upper middle electrode layer, adapted such that a brightness state of a portion said first liquid crystal layer corresponding to a pixel of said display is changed by providing a non-zero voltage difference between an electrode of said top electrode layer and an electrode of said upper middle electrode layer, and adapted such that a brightness state of said portion of said first liquid crystal layer is maintained by providing substantially no voltage difference between said electrode of said top electrode layer and said electrode of said upper middle electrode layer; a lower middle electrode layer of electrodes; a second liquid crystal layer sandwiched between said upper middle electrode layer and said lower middle electrode layer, adapted such that a brightness state of a portion said second liquid crystal layer corresponding to said pixel of said display is changed by providing a non-zero voltage difference between an electrode of said upper middle

electrode layer and an electrode of said lower middle electrode layer, and adapted such that a brightness state of said portion of said second liquid crystal layer is maintained by providing substantially no voltage difference between said electrode of said upper middle electrode layer and said electrode of said lower middle electrode layer; a bottom electrode layer of electrodes; and a third liquid crystal layer sandwiched between said lower middle electrode layer and said bottom electrode layer, adapted such that a brightness state of a portion of said third liquid crystal layer corresponding to said pixel of said display is changed by providing a non-zero voltage difference between an electrode of said lower middle electrode layer and an electrode of said bottom electrode layer, and adapted such that a brightness state of said portion of said third liquid crystal layer is maintained by providing substantially no voltage difference between said electrode of said lower middle electrode layer and said electrode of said bottom electrode layer; wherein said pixel is formed by a stacked arrangement of said portions of said first, second, and third liquid crystal layers such that a color of said pixel is formed by light reflecting from all of said portions of said first, second, and third liquid crystal layers, and further wherein a brightness state of said pixel of said display is updated by changing and/or maintaining the brightness states of said portions of said first, second, and third liquid crystal layers sequentially or concurrently as claimed in claim 24.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nitin Patel whose telephone number is 571-272-7677. The examiner can normally be reached on 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shalwala Bipin can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nitin Patel/
Primary Examiner, Art Unit 2629